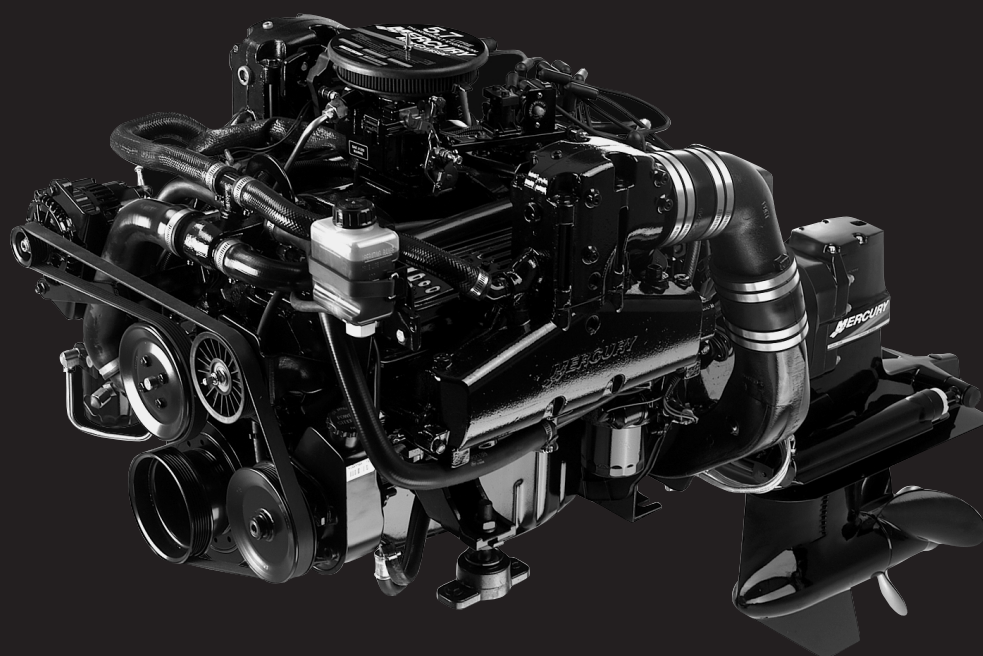




Service Manual #40



Gen III Cool Fuel Supplement to #30 & 31

Notice to Users of This Manual

Throughout this publication, Dangers, Warnings and Cautions (accompanied by the International HAZARD Symbol ) are used to alert the mechanic to special instructions concerning a particular service or operation that may be hazardous if performed incorrectly or carelessly. **OBSERVE THEM CAREFULLY!**

These safety alerts alone cannot eliminate the hazards that they signal. Strict compliance to these special instructions when performing the service, plus common sense operation, are major accident prevention measures.

DANGER

DANGER - indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.

WARNING

WARNING - indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.

CAUTION

CAUTION - indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury or property damage. It may also be used to alert against unsafe practices.

This manual has been written and published by the Service Department of Mercury Marine to aid our dealers' mechanics and company service personnel when servicing the products described herein. We reserve the right to make changes to this manual without prior notification.

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It is assumed that these personnel are familiar with marine product servicing procedures. Furthermore, it is assumed that they have been trained in the recommended service procedures of Mercury Marine Power Products, including the use of mechanics' common hand tools and the special Mercury Marine or recommended tools from other suppliers.

We could not possibly know of and advise the marine trade of all conceivable procedures and of the possible hazards and/or results of each method. Therefore, anyone who uses a service procedure and/or tool, which is not recommended by the manufacturer, first must completely satisfy himself that neither his nor the products safety will be endangered.

All information, illustrations and specifications contained in this manual are based on the latest product information available at the time of publication. As required, revisions to this manual will be sent to all dealers contracted by us to sell and/or service these products.

Refer to dealer service bulletins, operation maintenance and warranty manuals and installation manuals for other pertinent information concerning the products described in this manual.

Precautions

It should be kept in mind, while working on the product, that the electrical and ignition systems are capable of violent and damaging short circuits or severe electrical shocks. When performing any work where electrical terminals could possibly be grounded or touched by the mechanic, the battery cables should be disconnected at the battery.

Any time the intake or exhaust openings are exposed during service they should be covered to protect against accidental entrance of foreign material which could enter the cylinders and cause extensive internal damage when the engine is started.

It is important to note, during any maintenance procedure replacement fasteners must have the same measurements and strength as those removed. Numbers on the heads of the metric bolts and on the surfaces of metric nuts indicate their strength. American bolts use radial lines for this purpose, while most American nuts do not have strength markings. Mismatched or incorrect fasteners can result in damage or malfunction, or possibly personal injury. Therefore, fasteners removed should be saved for reuse in the same locations whenever possible. Where the fasteners are not satisfactory for reuse, care should be taken to select a replacement that matches the original.

Replacement Parts

Use of parts other than the recommended service replacement parts, will void the warranty on those parts that are damaged as a result.

WARNING

Electrical, ignition and fuel system components on Mercury Marine Power Products are designed and manufactured to comply with U.S. Coast Guard Rules and Regulations to minimize risks of fire or explosion.

Use of replacement electrical, ignition or fuel system components, which do not comply to these rules and regulations, could result in a fire or explosion hazard and should be avoided.

When servicing the electrical, ignition and fuel systems, it is extremely important that all components are properly installed and tightened. If not, any electrical or ignition component opening would permit sparks to ignite fuel vapors from fuel system leaks, if they existed.

Cleanliness and Care of Product

A Mercury Marine Power Product is a combination of many machined, honed, polished and lapped surfaces with tolerances that are measured in the ten thousands of an inch/mm. When any product component is serviced, care and cleanliness are important. Throughout this manual, it should be understood that proper cleaning and protection of machined surfaces and friction areas is a part of the repair procedure. This is considered standard shop practice even if not specifically stated.

Whenever components are removed for service, they should be retained in order. At the time of installation, they should be installed in the same locations and with the same mating surfaces as when removed.

Personnel should not work on or under an engine that is suspended. Engines should be attached to work stands, or lowered to ground as soon as possible.

Manual Outline

1 - Important Information

A - General Information

B - Maintenance

2 - Gen III Cool Fuel Module All Models

A - Gen III Cool Fuel Module Removal and Disassembly

B - Gen III Cool Fuel Module Assembly and Installation

3 - Fuel System

A - Troubleshooting and Repair

B - Fuel Flow Diagram

4 - Cooling System

A - Coolant and Water Flow Diagrams

Important Information

1

Gen III Cool Fuel Module All Models

2

Fuel System

3

Cooling System

4

Important Information

Section 1A - General Information



Table of Contents

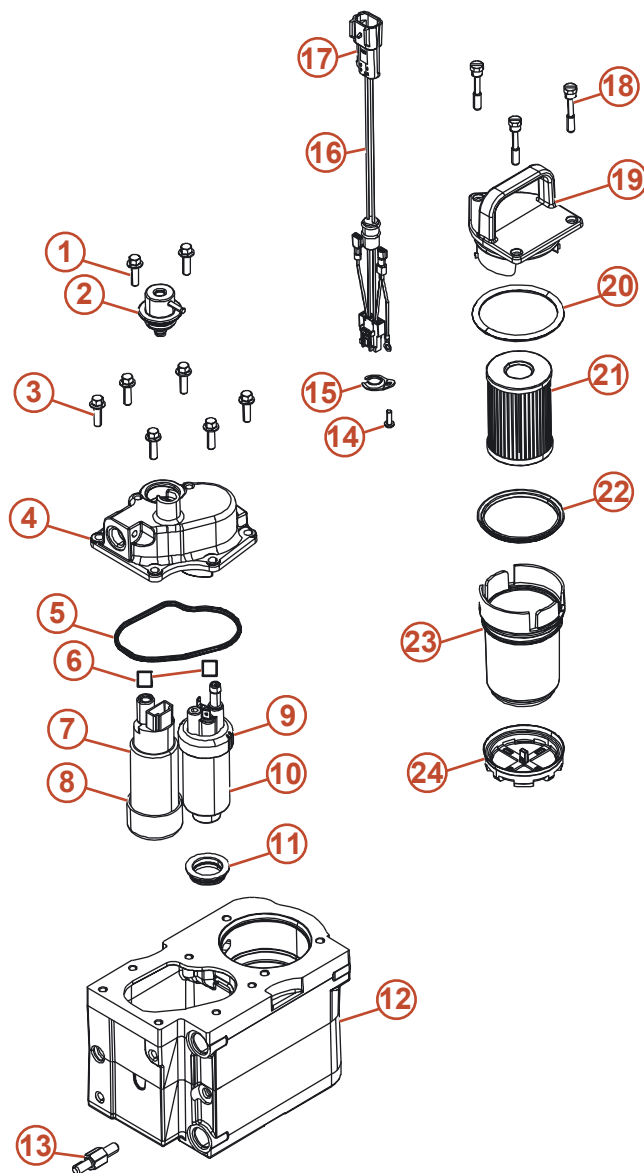
Introduction.....	1A-2	Gen III Cool Fuel Module Exploded View.....	1A-3
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Introduction

This supplement is designed as a service guide for the models previously listed. It provides specific information, including procedures for disassembly, inspection, assembly, and Installation to enable dealers and service mechanics to diagnose and repair the Generation III Cool Fuel Module.

Before attempting repairs it is suggested that the procedure first be read through to gain knowledge of the methods and tools used and the cautions and warnings required for safety.

Gen III Cool Fuel Module Exploded View



8810

- | | |
|---|--|
| 1 - Pressure regulator screws | 13 - Stud |
| 2 - Pressure regulator | 14 - Screw, Wire harness retainer |
| 3 - Screws, Top cover | 15 - Wire harness retainer |
| 4 - Top cover | 16 - Wire harness |
| 5 - Seal, Top cover | 17 - 2-pin electrical connector (plug) |
| 6 - Fuel pump outlet seal | 18 - Screws, Filter cap |
| 7 - High-pressure fuel pump | 19 - Filter cap |
| 8 - Isolator, High-pressure fuel pump | 20 - O-ring |
| 9 - Isolator, Low-pressure fuel pump | 21 - Fuel filter |
| 10 - Low-pressure fuel pump | 22 - Seal, Filter cup |
| 11 - Inlet seal, Low-pressure fuel pump | 23 - Filter cup |
| 12 - Cool Fuel Module housing | 24 - Filter disc |

Important Information

Section 1B - Maintenance



Table of Contents

Changing Water Separating Fuel Filter Element	
.....	1B-2

Changing Water Separating Fuel Filter Element

WARNING

Avoid Fire or Explosion: The fuel injection system is pressurized during operation. Use care when removing the water separating fuel filter. Allow the engine to cool down before attempting to remove the water separating fuel filter in the following procedure.

WARNING

Be careful when changing the water separating fuel filter. Gasoline is extremely flammable and highly explosive under certain conditions. Ensure the ignition key is "OFF". Do not smoke or allow spark or open flame in the area when changing the fuel filter. Wipe up any spilled fuel immediately.

WARNING

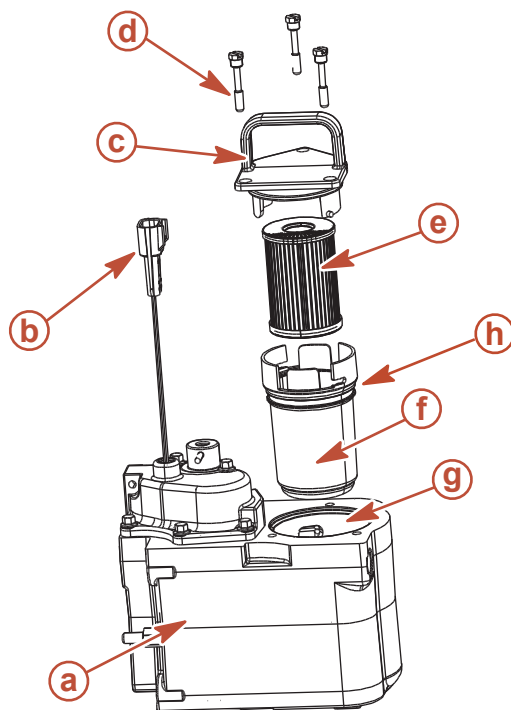
Ensure that no fuel leaks exist before closing the engine hatch.

1. Allow the engine to cool down.
2. Close fuel supply valve, if equipped.

NOTE: Mercury MerCruiser recommends that the engine be shut off for 12 hours prior to filter removal.

3. Disconnect the Cool Fuel Module harness from the engine wiring harness.
4. Turn the key switch to the start position and allow the starter to operate for 5 seconds to relieve fuel system pressure.
5. Turn key switch to off position.
6. Unseat the filter assembly by grasping the filter assembly handle and pulling upward. Do not completely remove the filter assembly from the Cool Fuel Module at this time.

7. Loosen each filter assembly retaining screw until the screw is disengaged from the Cool Fuel Module. Do not remove the filter assembly retaining screws from the filter cap.



8837

- | | |
|--|--|
| a - Cool Fuel Module | e - Fuel filter element |
| b - Cool Fuel Module harness | f - Filter cup |
| c - Filter cap | g - Cool Fuel Module filter reservoir |
| d - Filter assembly retaining screw | h - Seal, Filter cup |

8. Allow any fuel that may be in the filter assembly to drain out through the bottom of the filter assembly and into the Cool Fuel Module filter reservoir.
9. Remove the filter cup from the filter cap by grasping the filter cap and rotating it in a clockwise direction while holding the filter cup stationary.
10. Remove the used water separating fuel filter element from the filter cup, place it in a clean, approved container.
11. Dispose of any water or debris that may be in the filter cup.
12. Install a new water separating fuel filter element into the filter cup. Push the element into the cup until completely seated.
13. Install new O-ring on the filter cup.
14. Attach the filter cap to the filter cup by grasping the filter cap and rotating it in a counter clockwise direction while holding the filter cup stationary, until the filter cap locks securely into place.
15. Install the fuel filter assembly slowly into the Cool Fuel Module to prevent spilling fuel, and align the screws retained in the filter cap with the screw holes in the Cool Fuel Module. Tighten the filter assembly retaining screws until hand tight.
16. Ensure that the filter cap is firmly seated against the Cool Fuel Module and torque each filter assembly retaining screw.
17. Open fuel supply valve, if equipped.

Description	Nm	lb. in.	lb. ft.
Filter assembly retaining screw	6	53	

18. Reconnect the Cool Fuel Module harness to the engine wiring harness.

19. Supply cooling water to the engine.

20. Properly ventilate the engine compartment.

⚠ WARNING

Avoid serious injury or death due to FIRE or EXPLOSION. Ensure that the engine compartment is well ventilated and that no gasoline vapors are present to prevent the possibility of a FIRE or EXPLOSION.

⚠ WARNING

Ensure that no fuel leaks exist before closing the engine hatch.

21. Run the engine and check for any leaks. Stop the engine immediately if any leak exists, and correct before continuing.

Gen III Cool Fuel Module All Models

Section 2A - Gen III Cool Fuel Module Removal and Disassembly

Table of Contents

2
A

Gen III Cool Fuel Module Removal.....	2A-2	Gen III Cool Fuel Module Disassembly.....	2A-5
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Gen III Cool Fuel Module Removal

⚠ WARNING

Always disconnect battery cables from battery before working on fuel system to prevent fire or explosion.

⚠ WARNING

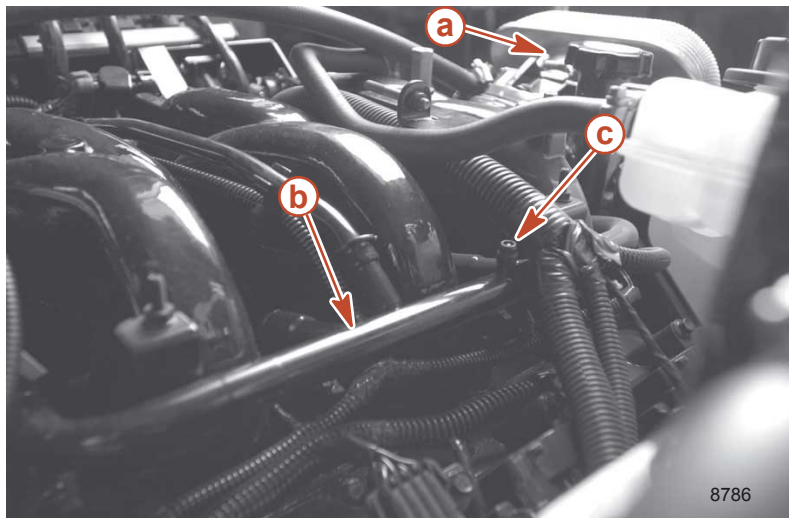
Fuel vapors can be present in the engine compartment. Avoid injury or power package damage caused by fuel vapors or explosion. Always ventilate the engine compartment prior to servicing the power package.

⚠ CAUTION

Pressurized fuel system! Release all pressure before servicing any part of the fuel system. This system can build pressure if the engine has not run for an extended period of time. If the fuel system is not relieved of pressure, fuel and vapors may be expelled at a significant velocity. Always protect your eyes and skin from pressurized fuel and vapors when servicing the fuel system.

1. Close the fuel supply valve.
2. Relieve fuel system pressure as follows:
 - a. Connect fuel pressure Gauge kit to Shrader valve.

Fuel pressure gauge kit	91-881883A2
-------------------------	-------------

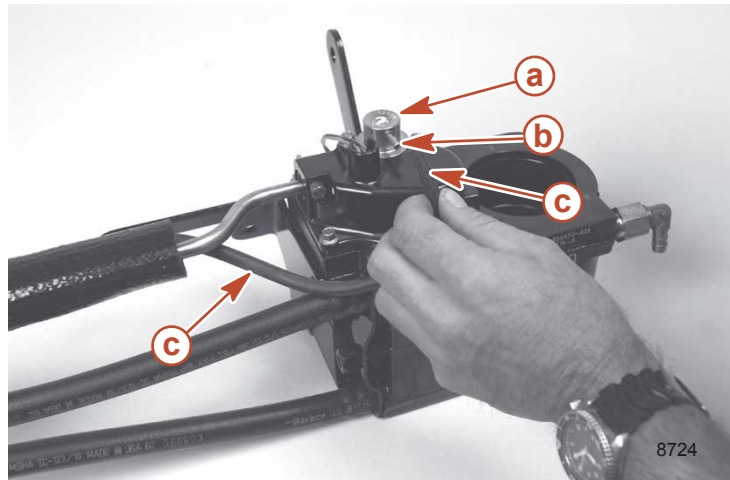


View from starboard side of engine looking forward

a - Throttle body and flame arrestor **c** - Shrader valve
b - Fuel rail

- b. Place fuel pressure gauge relief line into an approved container.
 - c. Open fuel pressure gauge relief valve to relieve pressure.
3. Close the seacock.
4. Disconnect negative (-) battery cable from battery (usually black).
5. Disconnect positive (+) battery cable from battery (usually red).
6. Disconnect Cool Fuel Module 2-pin harness connector.
7. Disconnect fuel supply (inlet) hose and plug hose.

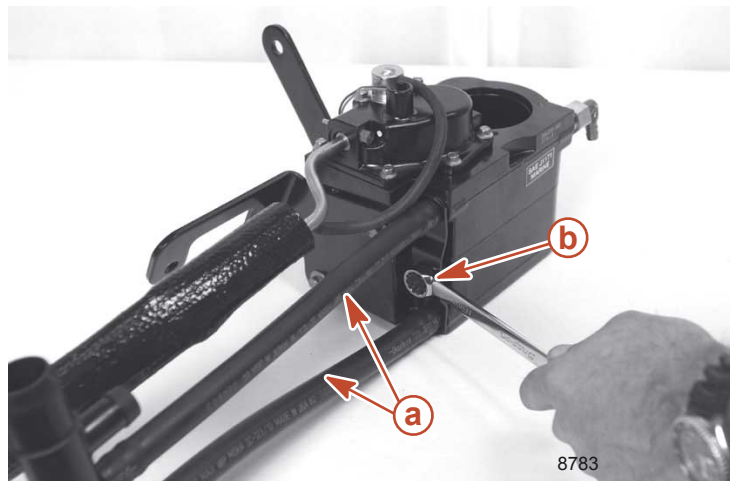
8. Disconnect fuel pressure regulator vacuum hose from fuel pressure regulator on Cool Fuel Module.



a - Fuel pressure regulator
b - Fuel pressure regulator hose nipple

c - Fuel pressure regulator vacuum hose

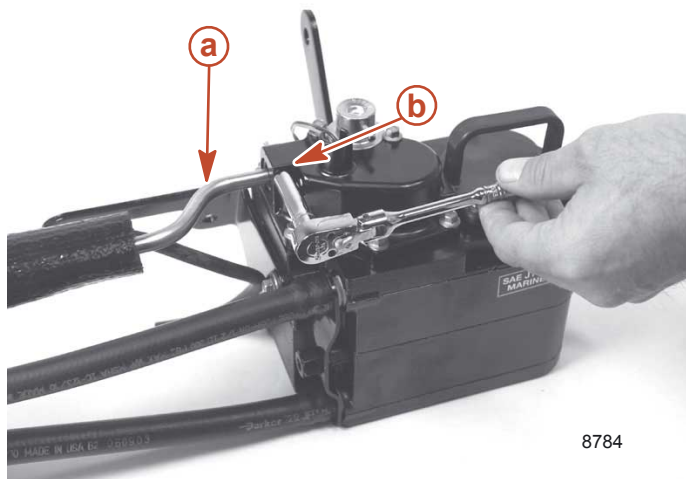
9. Loosen nut on cooling hose bracket and remove cooling hoses from Cool Fuel Module.



a - Cooling hoses

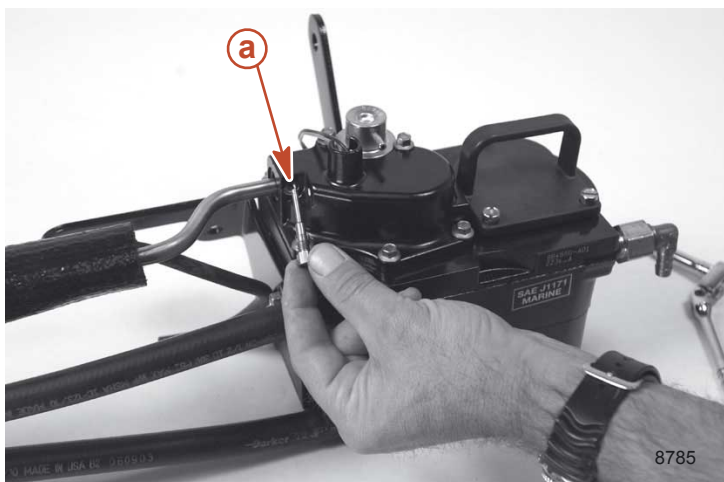
b - Bracket nut

10. Remove the fuel outlet line retainer screw.



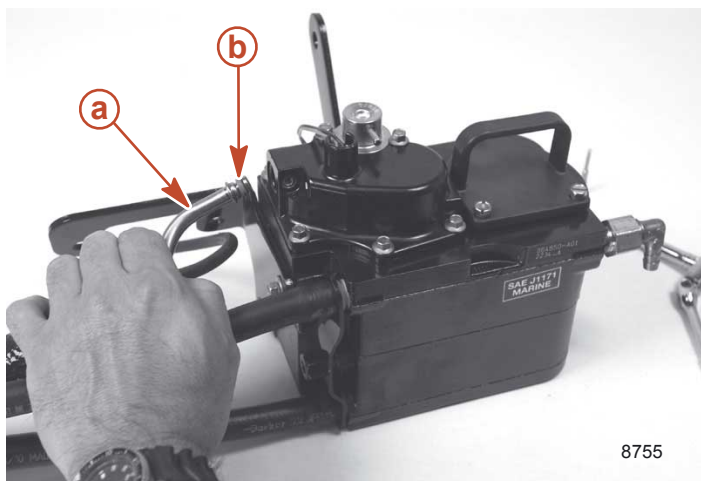
a - Fuel outlet line

b - Fuel outlet screw



a - Fuel outlet line retainer screw

11. Carefully pull the fuel outlet line straight out from the module and plug the line.



a - Fuel outlet line

b - O-ring

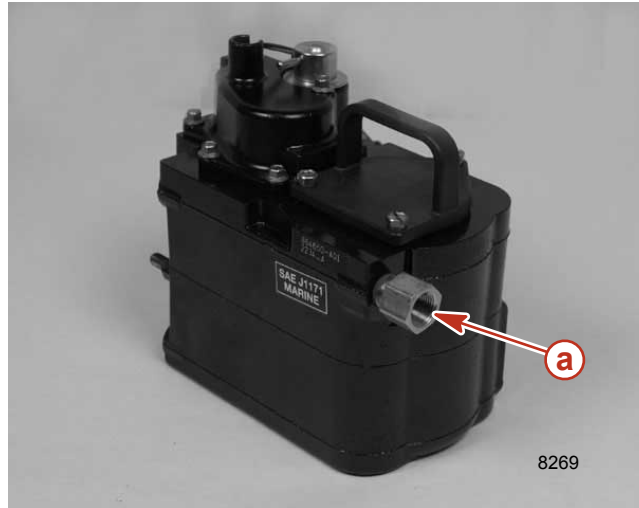
12. Remove Cool Fuel Module mounting brackets from engine.

13. Carefully remove the Cool Fuel Module from the engine.

Gen III Cool Fuel Module Disassembly

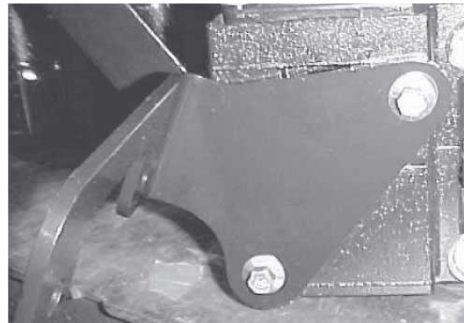
NOTE: Retain all fasteners and hardware unless instructed otherwise.

IMPORTANT: Do not remove the fuel inlet adapter fitting.



a - Fuel inlet adapter fitting.

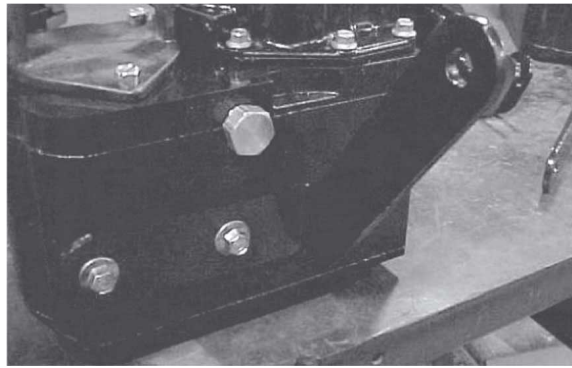
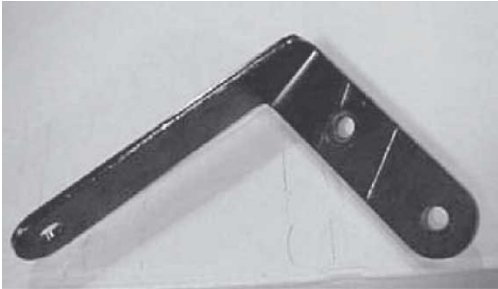
1. Remove Cool Fuel Module from engine. Refer to Gen III Cool Fuel Module Removal.
2. Remove primary mounting bracket from Cool Fuel Module.



8795

Primary Bracket

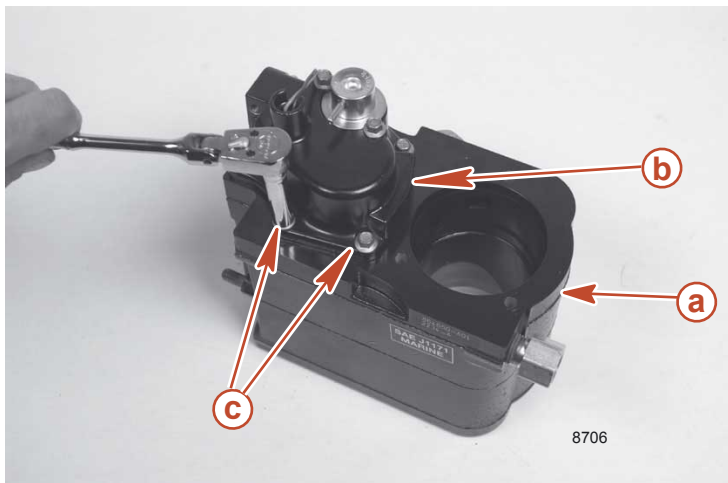
3. Remove support bracket from Cool Fuel Module.



8796

Support Bracket

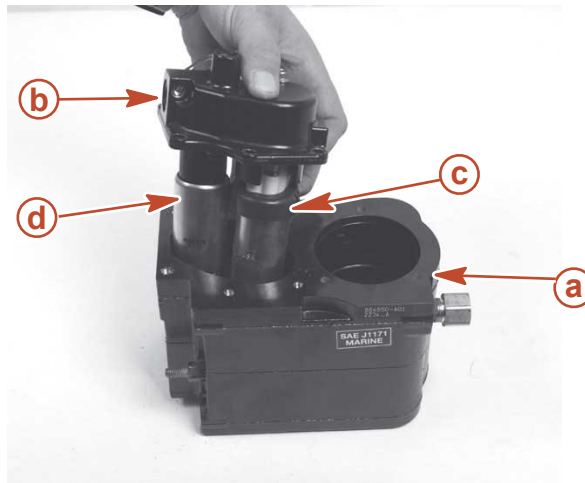
4. Remove filter assembly. Refer to Section 1B of this manual for filter removal procedure.
5. Remove 6 screws holding top cover.



a - Gen III Cool Fuel Module
b - Top cover

c - Top cover screws (not all shown)

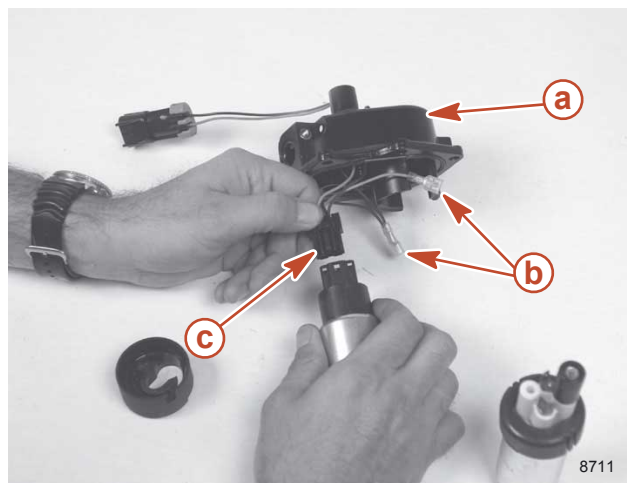
6. Pull top cover straight up.



a - Gen III Cool Fuel Module
b - Top cover

c - Low-pressure fuel pump
d - High-pressure fuel pump

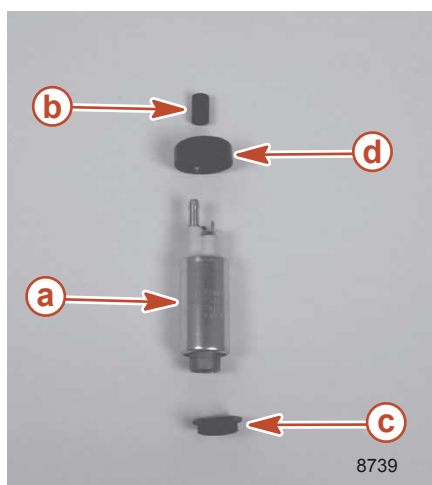
7. Disconnect electrical connections from the low-pressure and high-pressure pumps and remove the pumps from the top cover.



a - Top cover
b - Low-pressure fuel pump electrical connections

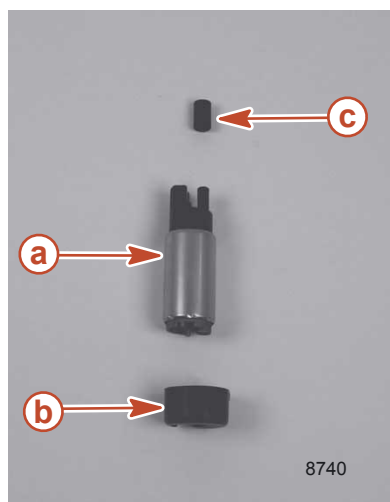
c - High-pressure fuel pump electrical connector

8. Remove seals and isolators from fuel pumps.



Low-pressure Fuel Pump

- | | |
|-----------------------------------|-----------------------|
| a - Low-pressure fuel pump | c - Inlet seal |
| b - Outlet seal | d - Isolator |



High-pressure Fuel Pump

- | | |
|------------------------------------|------------------------|
| a - High-pressure fuel pump | c - Outlet seal |
| b - Isolator | |

NOTE: Fuel inlet seal for low-pressure pump may not come out with the pump when pump is removed from the Cool Fuel Module housing. Be sure to remove the seal from the housing before low-pressure fuel pump installation.

9. Drain fuel from Gen III Cool Fuel Module into an approved container.

Gen III Cool Fuel Module All Models

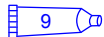
Section 2B - Gen III Cool Fuel Module Assembly and Installation

Table of Contents

2
B

Gen III Cool Fuel Module Assembly.....	2B-2	Top Cover and Fuel Pumps	2B-2
Fuel Inlet Adapter Fitting.....	2B-2	Fuel Pressure Regulator.....	2B-7
		Gen III Cool Fuel Module Installation.....	2B-8

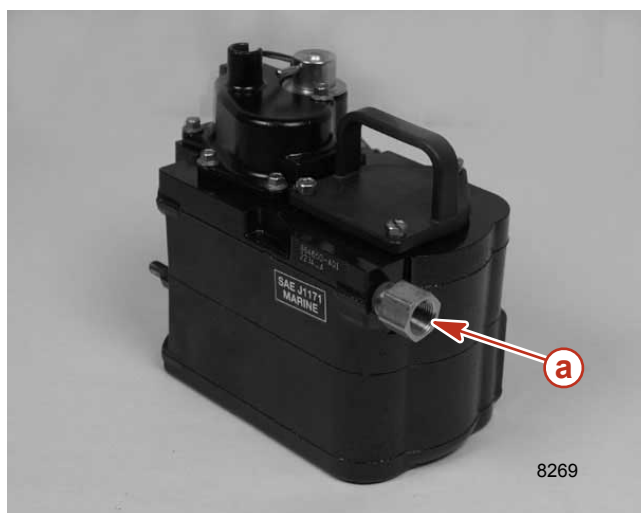
Lubricant, Sealant, Adhesives

Tube Ref No.	Description	Where Used	Part No.
 9	Loctite 567 PST Pipe Sealant	Fuel line inlet connector to adapter.	92-809822

Gen III Cool Fuel Module Assembly

Fuel Inlet Adapter Fitting

1. Install the fuel filter assembly. Refer to Section 1B for filter installation procedure.
2. Hand thread the fuel inlet fitting adapter with pre-applied sealant into the Cool Fuel Module.
3. Torque the fuel inlet adapter fitting to specification.



a - Fuel inlet fitting adapter.

⚠ WARNING

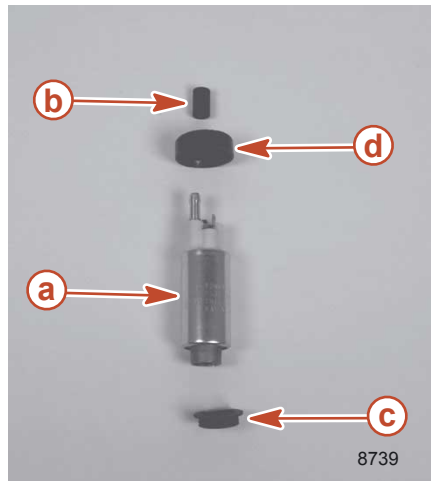
Overtightening the fuel inlet fitting can lead to fuel leaks, avoid severe personal injury or death from a gasoline fire or explosion. Do not use a power tool (i.e. impact wrench) to tighten the fuel inlet fitting.

Description	Nm	lb. in.	lb. ft.
Fuel inlet fitting adapter	22		16

Top Cover and Fuel Pumps

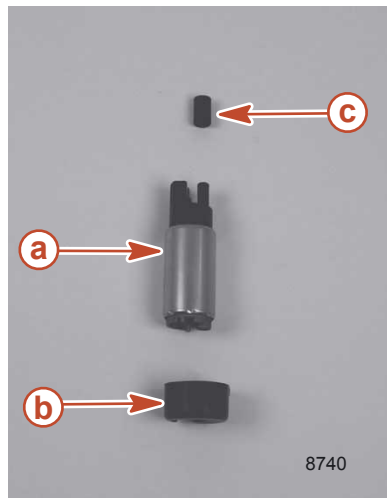
1. Place the fuel pump outlet seals and isolators onto both fuel pumps.
2. Place the inlet seal for the low-pressure pump into the Cool Fuel Module housing.

IMPORTANT: The inlet (bottom) seal on the low-pressure pump must be placed in the Cool Fuel housing for installation. Do NOT place the inlet seal on the pump prior to pump installation. The seal may become dislodged during pump installation and cause the pump not to seal properly.



Low-pressure Fuel Pump

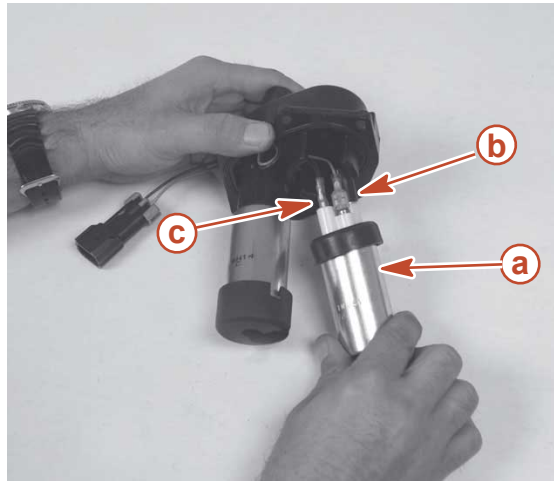
- | | |
|-----------------------------------|-----------------------|
| a - Low-pressure fuel pump | c - Inlet seal |
| b - Outlet Seal | d - Isolator |



High-pressure Fuel Pump (low-pressure fuel pump removed for visual clarity)

- | | |
|------------------------------------|------------------------|
| a - High-pressure fuel pump | c - Outlet seal |
| b - Isolator | |

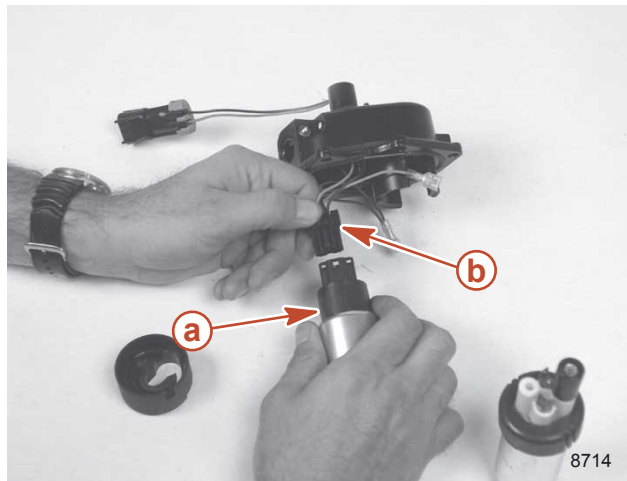
3. Connect the electrical connectors to the low-pressure pump. Red wire to positive terminal. Black wire to negative terminal. The fuel pump is marked (+) positive and (-) negative on the top of the pump. Spade connection sizes are matched to the appropriate connection as well.



Low-pressure Fuel Pump

- a** - Low-pressure fuel pump **c** - Negative (-) electrical connection
b - Positive (+) electrical connection

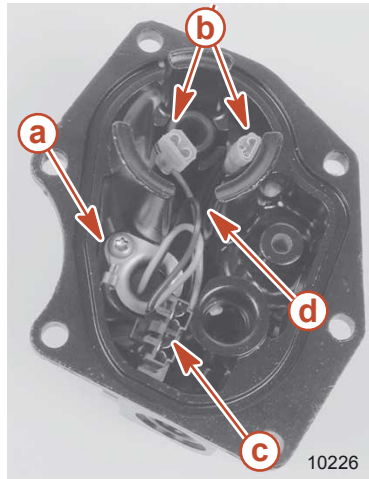
4. Connect the electrical connector to the high-pressure fuel pump.



High-pressure Fuel Pump (low-pressure pump disconnected for clarity)

- a** - High-pressure fuel pump **b** - Electrical connector

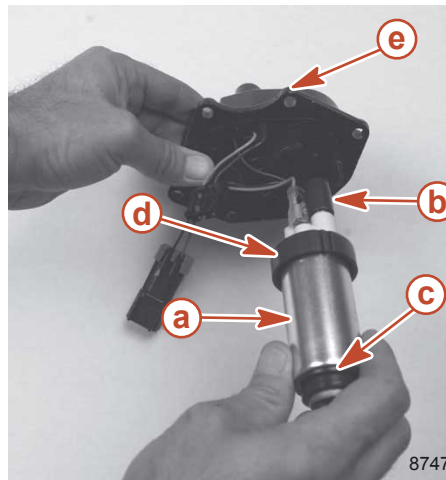
5. Route the wires as shown. Ensure that the ground wire terminal at the harness end is positioned against the outer wall of the casing. Low-pressure pump wiring must be routed through the slot and above the fuel pump. High-pressure pump wiring must also be routed above the fuel pump. Ensure that the wiring is not bound or pinched.



Fuel Pumps Not Shown For Visual Clarity

- | | |
|--|--|
| a - Ground wire terminal | c - High-pressure pump electrical connector |
| b - Low-pressure pump electrical connectors | d - Slot (low-pressure pump wire routing) |

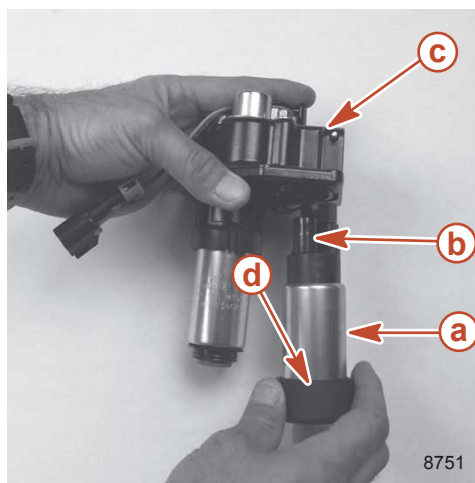
6. Insert the low-pressure pump into the top cover.



Low-pressure Fuel Pump Installation

- | | |
|-----------------------------------|----------------------|
| a - Low-pressure fuel pump | d - Isolator |
| b - Outlet seal | e - Top cover |
| c - Inlet seal | |

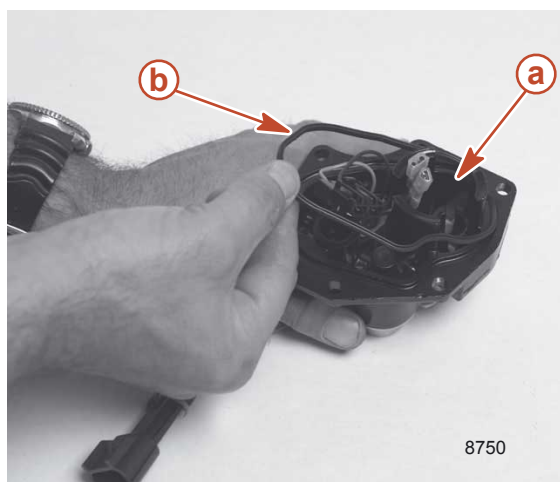
7. Insert the high-pressure pump into the top cover.



High-pressure Fuel Pump Installation

- | | |
|------------------------------------|----------------------|
| a - High-pressure fuel pump | c - Top cover |
| b - Outlet seal | d - Isolator |

8. Verify that the top cover seal is not damaged. Replace if necessary.
9. Place the top cover seal into the groove in the top cover.

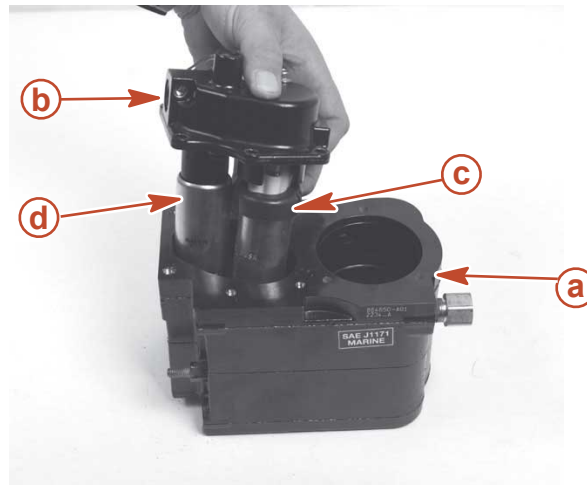


Fuel Pumps Not Shown For Visual Clarity

- | | |
|---------------------------------------|---------------------------|
| a - Cool Fuel Module top cover | b - Top cover seal |
|---------------------------------------|---------------------------|

NOTE: Be sure that mating surfaces are clean and clear of any debris before installation of the top cover.

Carefully lower the top cover with fuel pumps into the Cool Fuel Module housing.



a - Cool Fuel Module housing
b - Top cover

c - low-pressure pump
d - High-pressure pump

11. Install the top cover screws and hand-tighten.

12. Verify that the top cover is not bound and pull the cover gently into place with the top cover screws.

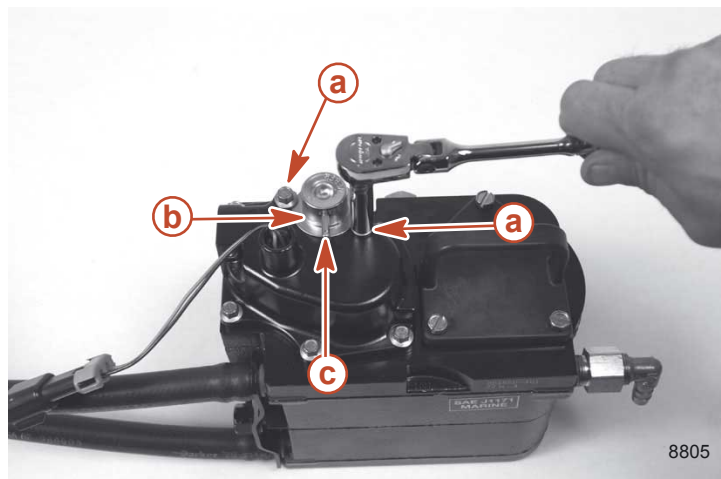
IMPORTANT: Be sure to tighten the top cover screws evenly when pulling the top cover down into place.

13. Torque top cover screws.

Description	Nm	lb. in.	lb. ft.
Top cover screws	14	124	

Fuel Pressure Regulator

1. Insert the fuel pressure regulator into the top cover with the hose barb facing the outboard side of the Cool Fuel Module.



a - Fuel pressure regulator screws (2)
b - Fuel pressure regulator

c - Fuel pressure regulator vacuum hose barb

2. Install the (2) pressure regulator screws and torque to specification.

Description	Nm	lb. in.	lb. ft.
Pressure regulator screws	14	124	

Gen III Cool Fuel Module Installation

1. Connect the primary mounting bracket to the Cool Fuel Module. Torque to specification.

Description	Nm	lb. in.	lb. ft.
Primary bracket screws (Cool Fuel Module)	21.7-25.1		16-18.5

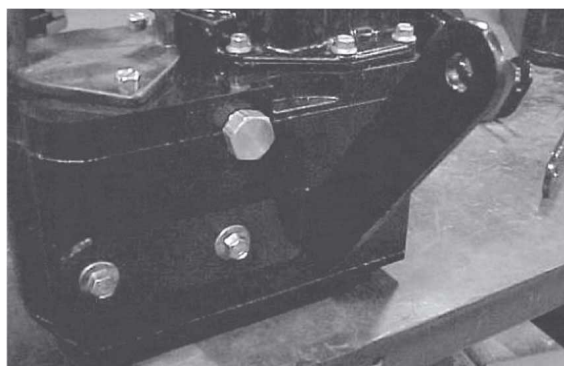
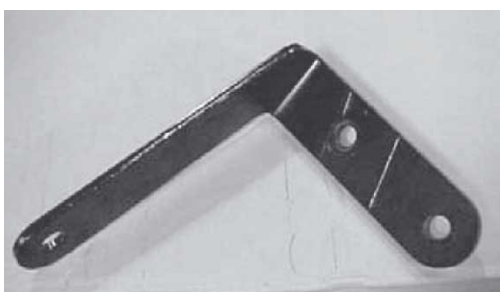


8795

Primary Bracket

2. Connect the support bracket to the Cool Fuel Module. Torque to specification.

Description	Nm	lb. in.	lb. ft.
Support bracket screws (Cool Fuel Module)	21.7-25.1		16-18.5



8796

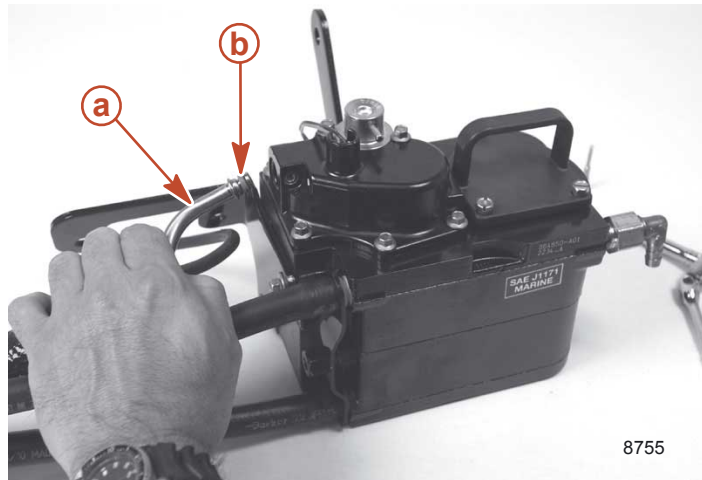
Support Bracket

3. Install the Cool Fuel Module onto the engine. Torque bracket fasteners to specification.

Description	Nm	lb. in.	lb. ft.
Primary bracket screw (engine)	27.12-35.25		20-26
Primary bracket nuts (engine)	40.67-54.23		30-40
Support bracket nut (engine)	27.12-35.25		20-26

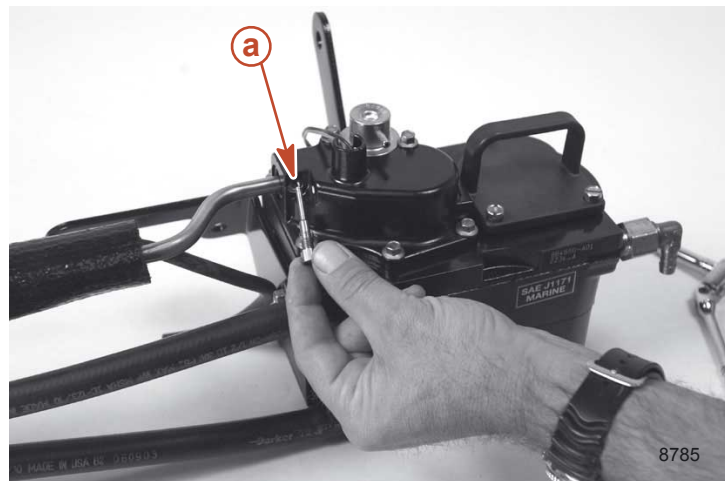
4. Inspect the fuel outlet line O-ring. Replace if damaged.
5. Apply a thin coat of oil to the O-ring.

Description	Where used	Part No.
Mercury/Quicksilver Synthetic Blend, NMMA FC-W rated, 4-cycle oil	Fuel outlet line O-ring	92-883724K01

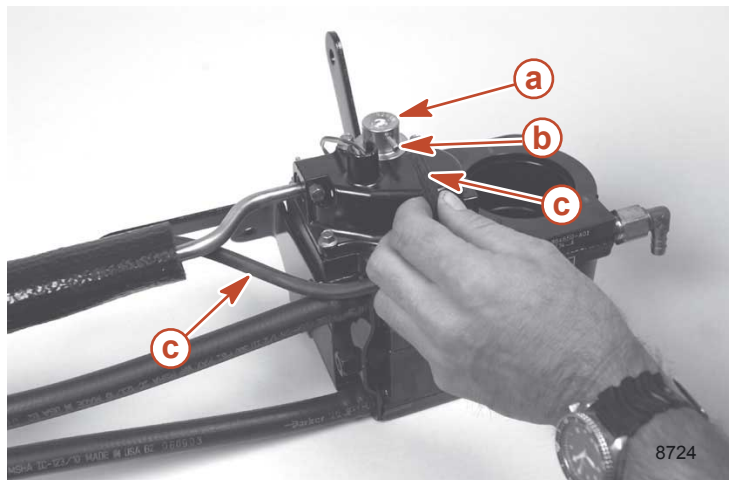
**a** - Fuel outlet line**b** - O-ring

6. Carefully insert the fuel outlet line into the Cool Fuel Module.
7. Install the fuel outlet line retainer screw. Torque to specification.

Description	Nm	lb. in.	lb. ft.
Fuel outlet line retainer screw	9	80	

**a** - Fuel outlet line retainer screw

8. Install the vacuum hose onto the fuel pressure regulator.



a - Fuel pressure regulator

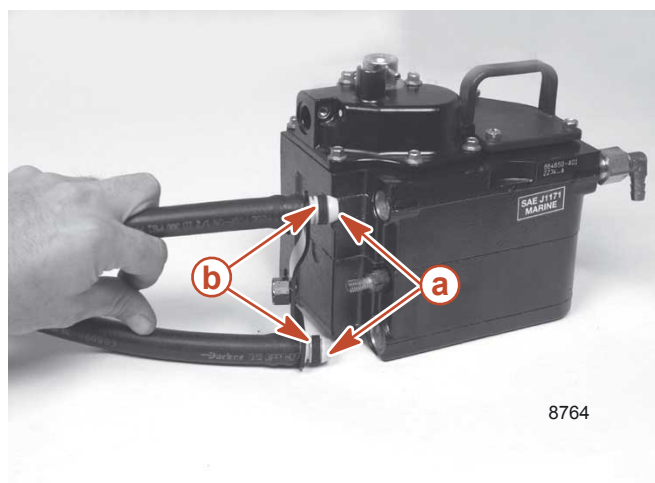
b - Fuel pressure regulator hose nipple

c - Fuel pressure regulator vacuum hose

9. Inspect quad rings on cooling hose orifices. Replace if damaged.

10. Coat quad rings with lubricant.

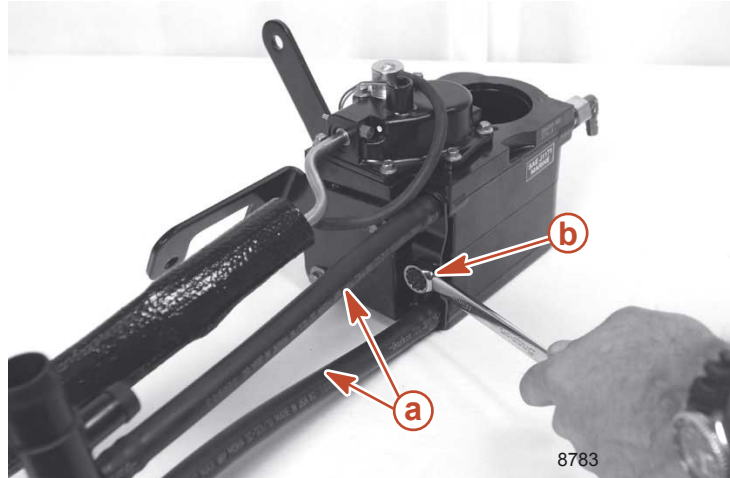
Description	Where used	Part No.
Parker Super Lube™	Cooling hose quad rings	Obtain locally



a - Cooling hose orifices

b - Quad rings

11. Align the cooling hoses and bracket to the Cool fuel Module and connect the bracket with the attached nut. Push the cooling hose ends into place on the Cool Fuel Module.



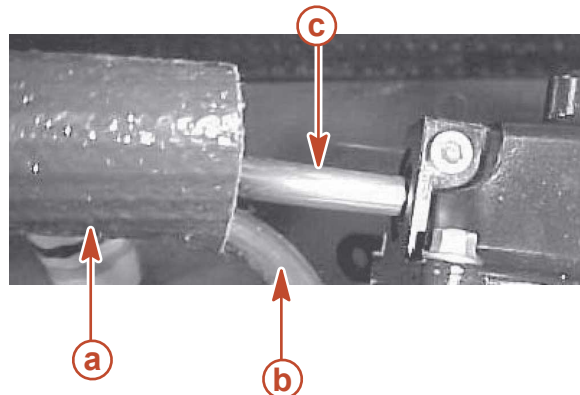
a - Cooling hoses and bracket

b - Cooling hose bracket nut

12. Torque the cooling hose bracket nut to specification.

Description	Nm	lb. in.	lb. ft.
Cooling hose bracket nut	1.35-1.81		12-16

13. Pull heat resistant sleeve until vacuum hose and fuel outlet line are completely covered at the module.



a - Heat resistant sleeve

b - Fuel pressure regulator vacuum hose

c - Fuel outlet line

14. Apply sealant to the fuel supply line inlet connector.

Tube Ref No.	Description	Where Used	Part No.
 9	Loctite 567 PST Pipe Sealant	Fuel line inlet connector to adapter.	92-809822

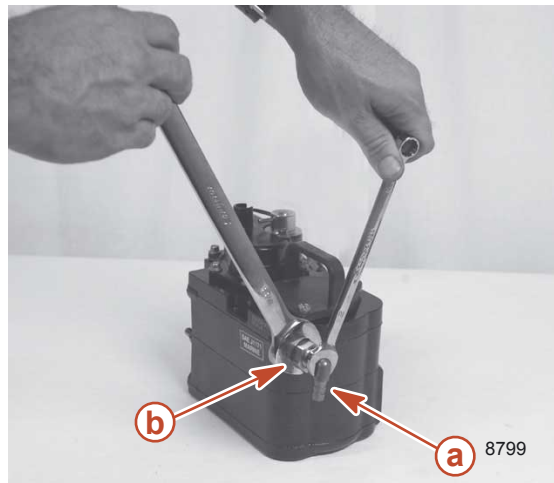
⚠ CAUTION

Apply Loctite Pipe Sealant with Teflon to the threads of the fuel inlet connector. Do not use Teflon tape. To prevent cracking the casting and/or fuel leaks, turn the inlet connector in by hand finger-tight, then tighten it an additional 1-3/4 to 2-1/2 turns with a wrench. Do not overtighten. Inspect for leaks.

15. Install the fuel line inlet connector by hand, finger-tight.

16. While holding the fuel inlet adapter fitting securely, tighten the fuel line inlet connector an additional 1-3/4 to 2-1/2 turns with a wrench. Do not overtighten.

IMPORTANT: Hold fuel inlet adapter fitting securely when installing fuel line inlet connector.



Typical

a - Fuel line connector (typical 90 degree hose barb)

b - Fuel inlet adapter fitting

17. Connect the Cool Fuel Module 2-pin harness connector.

18. Connect the positive (+) battery cable to the battery (usually red).

19. Connect the negative (-) battery cable to the battery (usually black).

20. Open the seacock, if equipped.

21. Open the fuel supply valve, if equipped.

22. Run the engine and check for any leaks. Stop the engine immediately if any leak exists, and correct before continuing.

Fuel System

Section 3A - Troubleshooting and Repair

Table of Contents

Gen III Cool Fuel Module Diagnostics.....	3A-2	Checking Fuel Pressure and Fuel Supply	
Electrical.....	3A-2	Vacuum.....	3A-2
		In-Water Test.....	3A-2

3
A

Special Tools

Fuel Shut Off Tool	91-805918A1
	Tests fuel system pressure / vacuum

Gen III Cool Fuel Module Diagnostics

Electrical

1. Disconnect the electrical connector at the Cool Fuel Module.
2. Connect a Digital Volt / Ohm Meter (DVOM) to the engine side of the electrical connector.
3. Turn the ignition switch to the run position.
4. Verify that there is 12 volt battery (+) power going to the Cool Fuel Module. If voltage is less than 11.5 vdc, find and correct the voltage drop or no voltage condition.

NOTE: The fuel pump relay will only remain active for 2-3 seconds while the key is in the RUN position.

Checking Fuel Pressure and Fuel Supply Vacuum

1. Connect a fuel pressure gauge to the schrader valve on the fuel rail.
2. Cycle key switch 2-3 times (OFF to RUN position) at 3 second intervals to reach maximum fuel pressure.
3. Verify that the pressure is within specification.
4. If fuel pressure exceeds 44 psi (303 kPa), replace the fuel pressure regulator.
5. If fuel pressure is less than 40 psi (276 kPa), but greater than 13 psi (90 kPa):
 - a. Relieve the fuel pressure in the fuel rail. Refer to section 2A for fuel pressure relief procedure.
 - b. Use a tee fitting and connect a vacuum gauge to the fuel inlet side of the Cool Fuel Module. Do not remove the fuel inlet fitting adapter.
 - c. Cycle the key switch 2-3 times (OFF to RUN position) at 3 second intervals to reach maximum pressure.
 - d. Verify that the vacuum from the fuel source is within specification. If the vacuum exceeds 2 in. Hg (7 kPa) , excessive fuel restriction exists. Correct the fuel restriction before proceeding.
 - e. With the vessel secured to the dock and the engine running in neutral, restrict the fuel supply with fuel shut-off tool and verify that the Cool Fuel Module has the ability to cause an inlet vacuum reading of 11 in. Hg (37 kPa) or greater. If the vacuum reading is less than 11 in. Hg (37 kPa) with the fuel supply restricted, but fuel pressure is within specification, replace the low-pressure pump.

Fuel Shut Off Tool	91-805918A1
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6. If fuel pressure is 13 psi (90 kPa) or less and inlet vacuum is less than 15 in. Hg (51 kPa), replace high-pressure pump and fuel pressure regulator.

In-Water Test

1. With a vacuum gauge and a fuel pressure gauge in place, operate the boat throughout the RPM range and record the pressure and vacuum readings.
2. If the fuel the supply vacuum reading is greater than 2 in. Hg (7 kPa) , find and correct the fuel supply restriction.

3. If fuel pressure is less than 40 psi (276 kPa), but greater than 13 psi (90 kPa):
 - a. Verify that the vacuum from the fuel source is within specification. If the vacuum exceeds 2 in. Hg (7 kPa) , excessive fuel restriction exists. Correct the fuel restriction before proceeding.
 - b. If no excessive fuel supply restriction exists, replace low-pressure fuel pump.
4. If fuel pressure is 13 psi (90 kPa) or less and no excessive fuel supply restriction exists, replace high-pressure pump and fuel pressure regulator.

IMPORTANT: It will be necessary to sea-trial the boat following repairs to be sure that the pressure and the fuel system vacuum remain within specification throughout the RPM range.

Fuel System

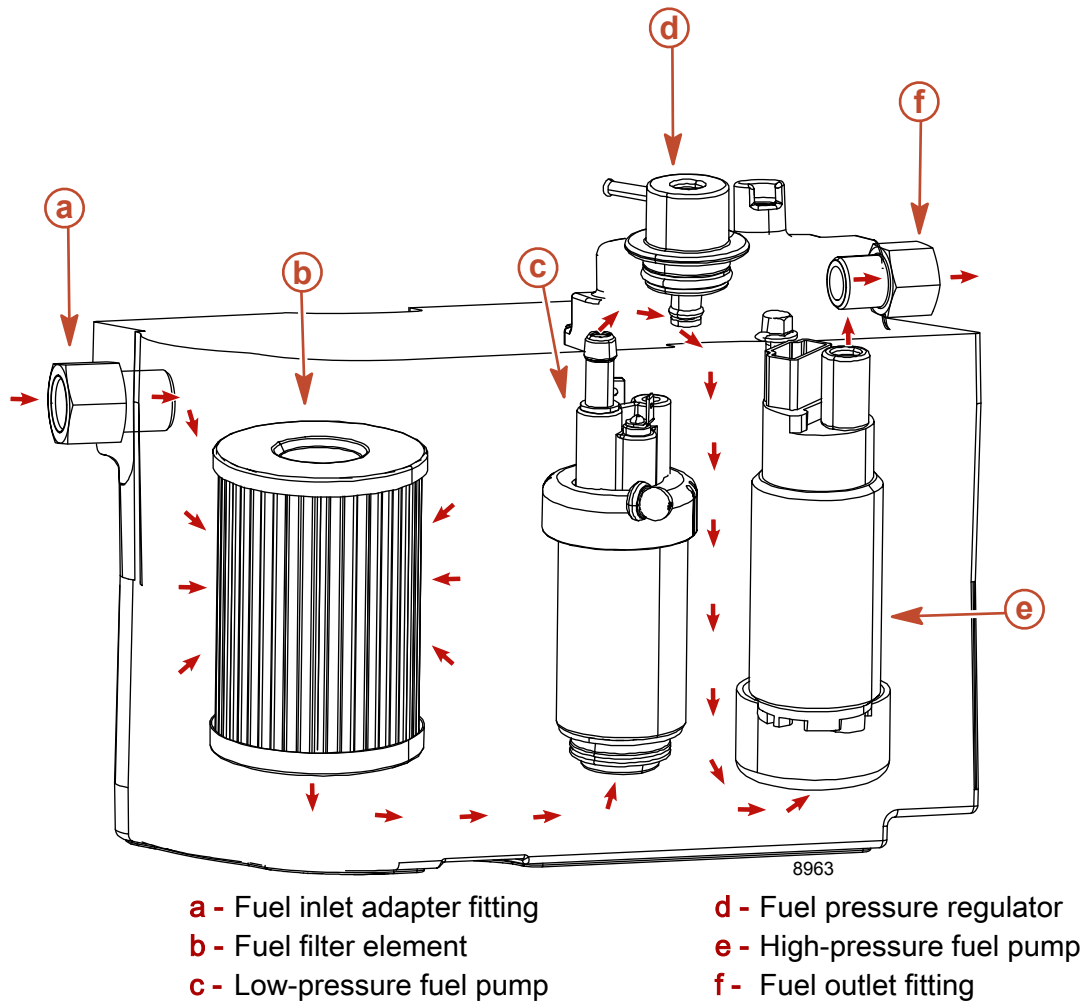
Section 3B - Fuel Flow Diagram

Table of Contents

Gen III Cool Fuel Module Fuel Flow Diagram..3B-2

**3
B**

Gen III Cool Fuel Module Fuel Flow Diagram



Cooling System

Section 4A - Coolant and Water Flow Diagrams

Table of Contents

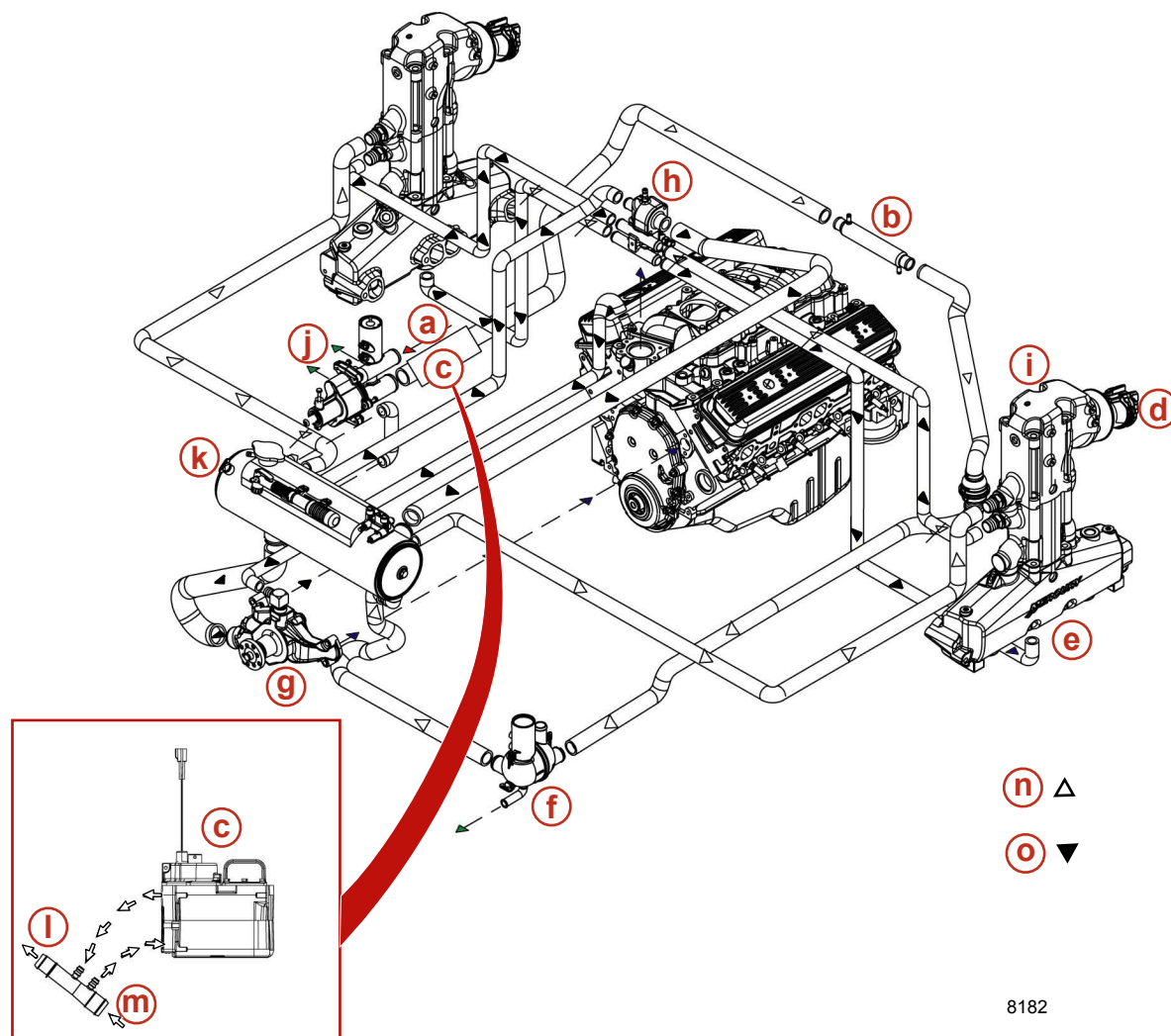
Water Flow Diagrams.....	4A-2	Sterndrive Water Flow Diagrams.....	4A-2
		Inboard Water Flow Diagrams.....	4A-6

4
A

Water Flow Diagrams

Sterndrive Water Flow Diagrams

V-8 CLOSED COOLED BRAVO MODELS WITH RISERS

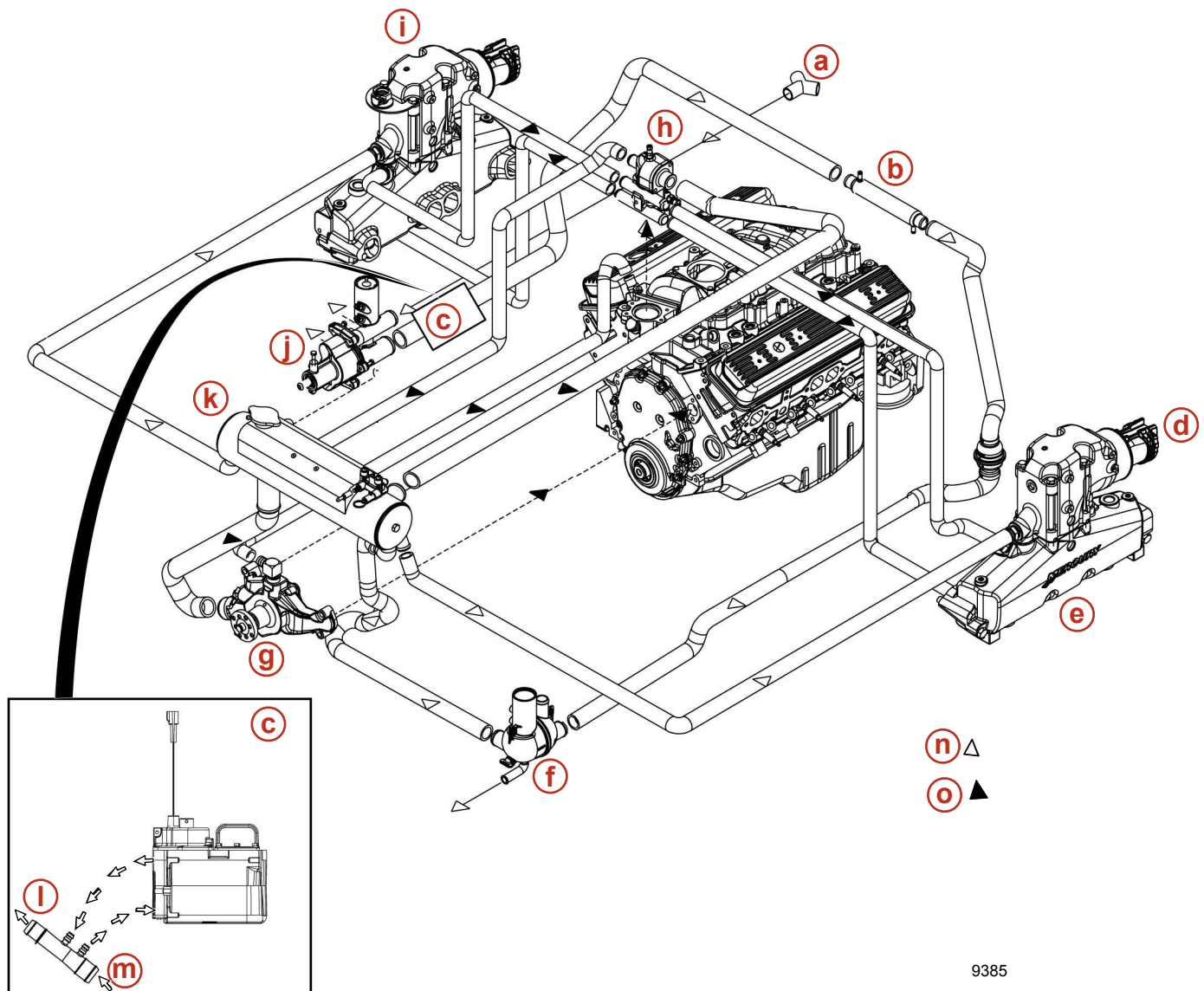


8182

- a** - Seawater inlet
- b** - Power steering cooler
- c** - Gen III cool fuel module
- d** - Exhaust and seawater outlet
- e** - Exhaust manifold
- f** - Distribution housing
- g** - Water circulating pump
- h** - Thermostat housing

- i** - Exhaust elbow
- j** - Seawater pump
- k** - Heat exchanger
- l** - To power steering pump
- m** - From seawater pump
- n** - Seawater
- o** - Ethylene glycol mix
- p** - Check valve

V8 CLOSED COOLED BRAVO MODELS

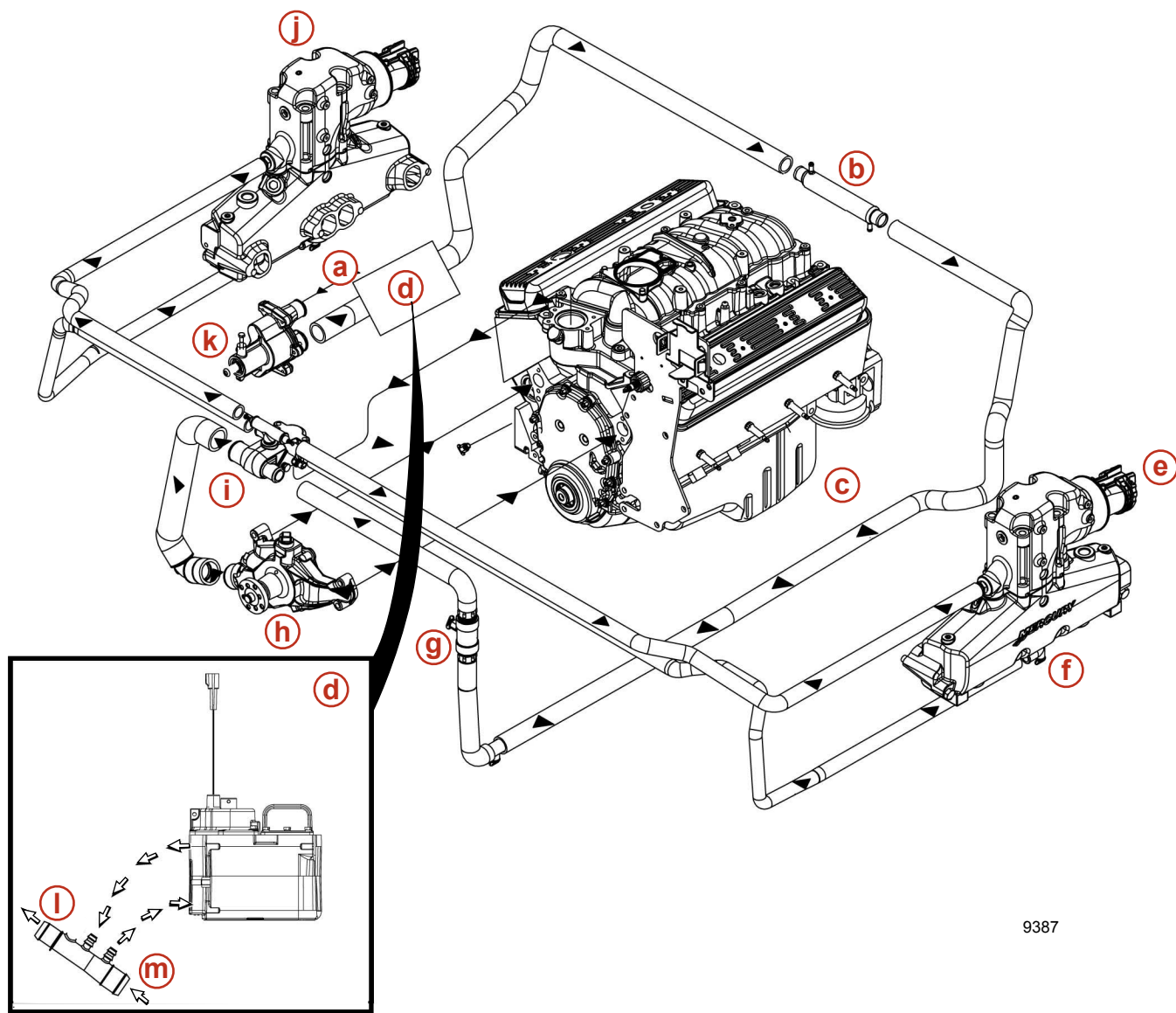


9385

- a** - Y-fitting
- b** - Power steering cooler
- c** - Gen III cool fuel module
- d** - Exhaust and seawater outlet
- e** - Exhaust manifold
- f** - Distribution housing
- g** - Water circulating pump
- h** - Thermostat housing

- i** - Exhaust elbow
- j** - Seawater pump
- k** - Heat exchanger
- l** - To power steering cooler
- m** - From seawater pump
- n** - Seawater
- o** - Ethylene glycol mix
- p** - Check valve

V8 SEAWATER COOLED BRAVO MPD MODELS

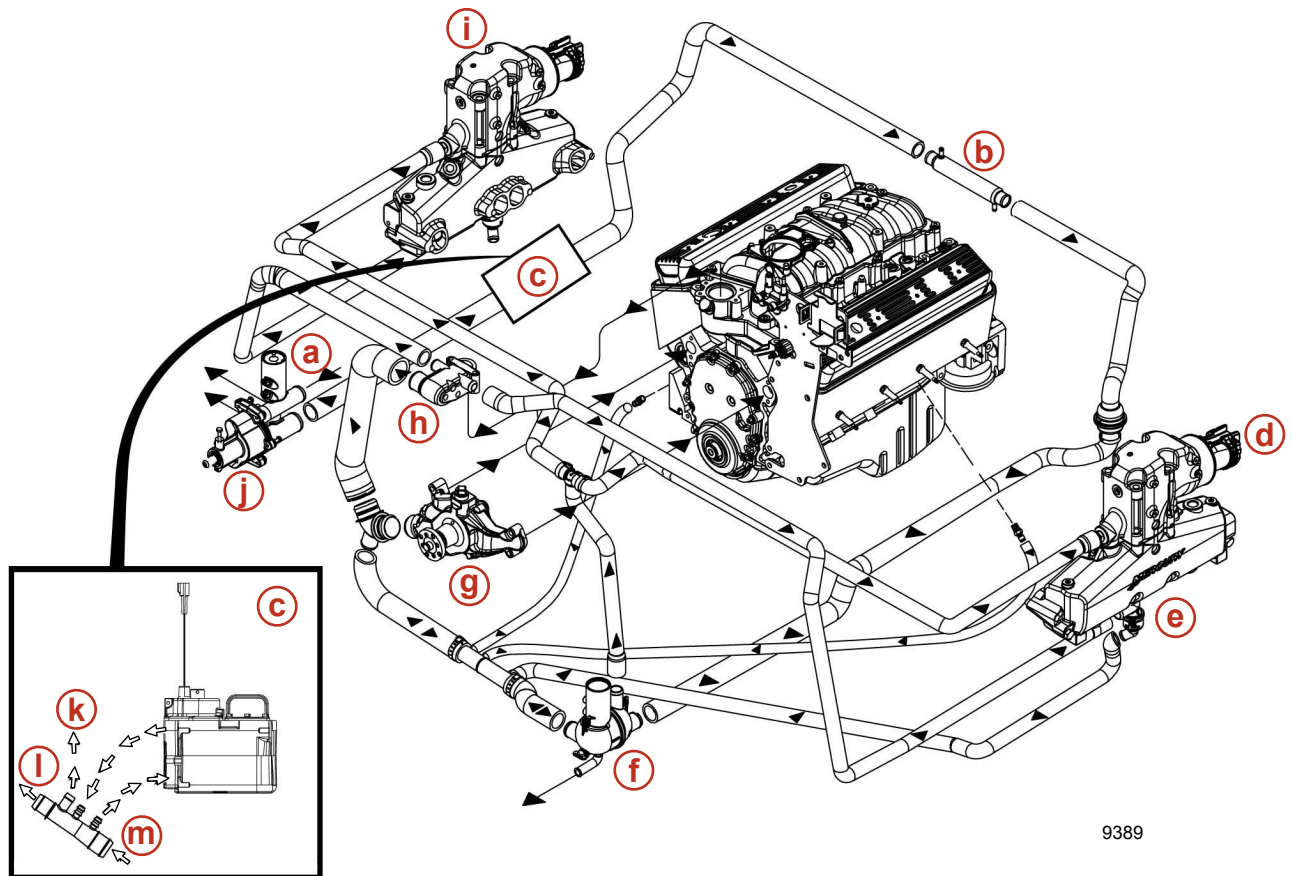


9387

- a** - Seawater inlet
- b** - Power steering cooler
- c** - Gen III Cool Fuel Module
- d** - Exhaust and seawater outlet
- e** - Exhaust manifold
- f** - Check valve

- g** - Water circulating pump
- h** - Thermostat housing
- i** - Exhaust elbow
- j** - Seawater pump
- k** - To power steering cooler
- l** - From seawater pump

V8 SEAWATER COOLED BRAVO MODELS EXCEPT MPD MODELS



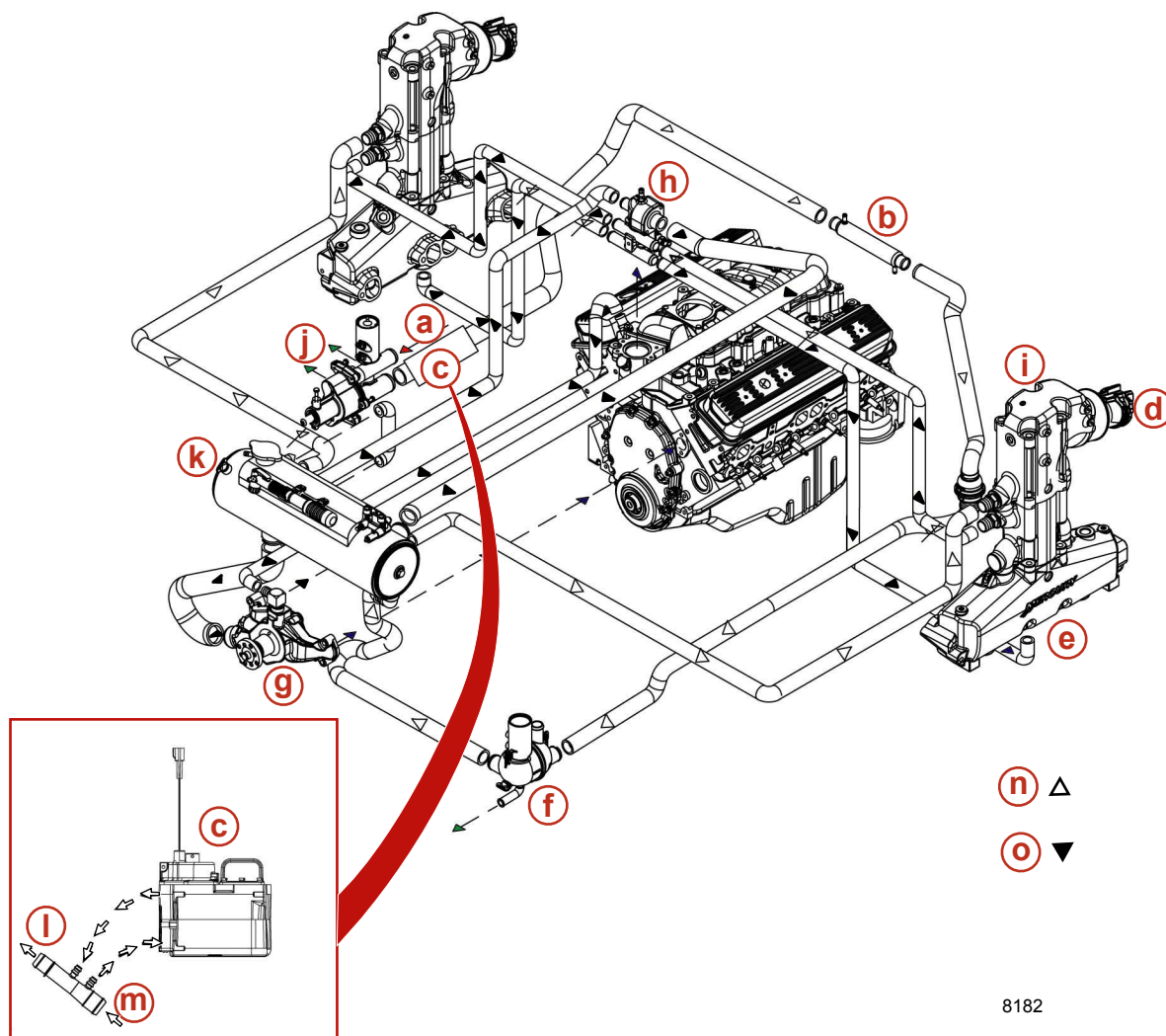
9389

- a** - Seawater inlet
- b** - Power steering cooler
- c** - Gen III cool fuel module
- d** - Exhaust and seawater outlet
- e** - Exhaust manifold
- f** - Distribution housing
- g** - Water circulating pump
- h** - Thermostat housing
- i** - Exhaust elbow
- j** - Seawater pump
- k** - To starboard exhaust manifold.
(Drain from starboard exhaust manifold when activated).
- l** - To power steering cooler
- m** - From seawater pump
- n** - Check valve

Inboard Water Flow Diagrams

CLOSED COOLED INLINE EXHAUST MODELS

NOTE: Certain components in the following diagram may look different than on your particular power package, but the water flow paths remain similar on all engines.

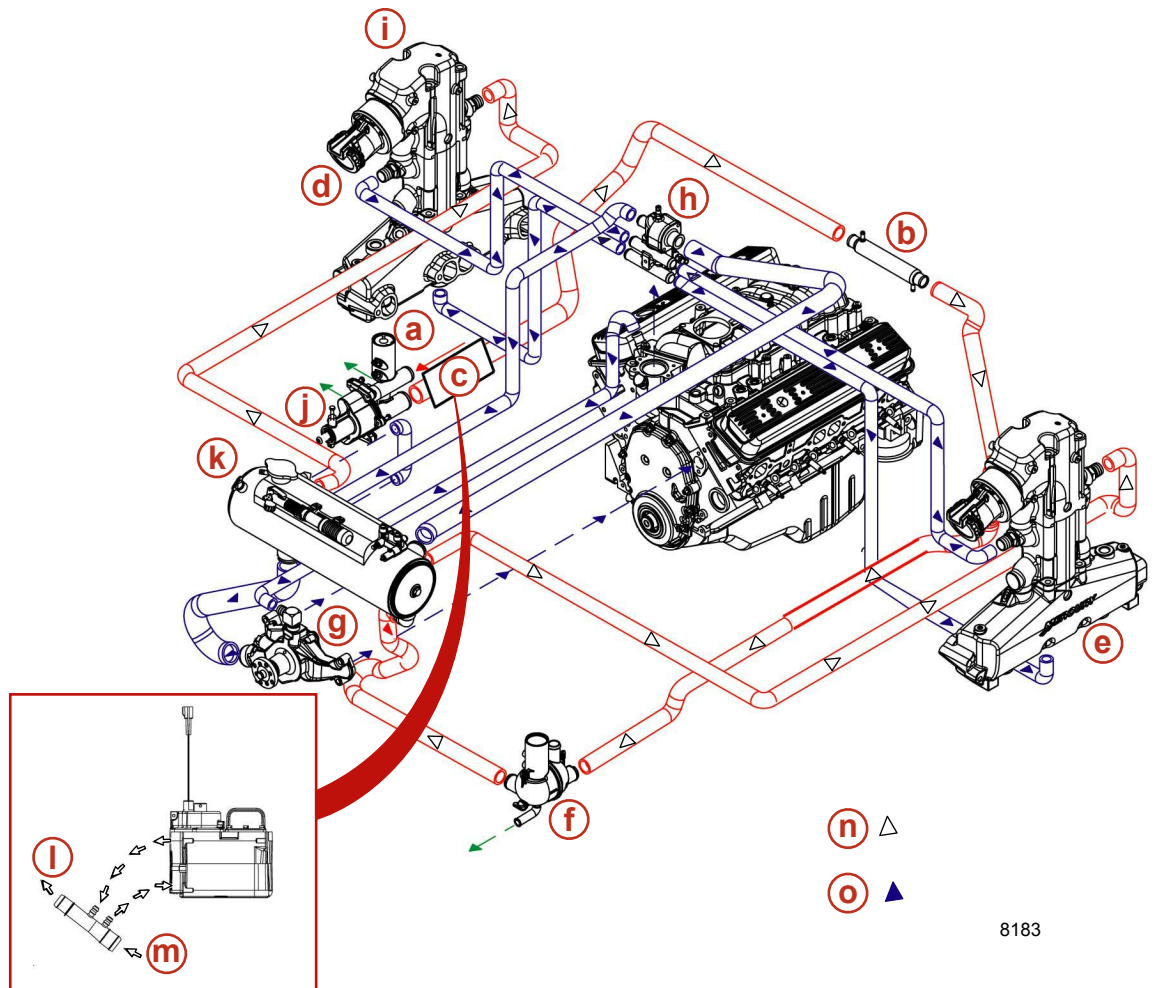


8182

- a - Seawater inlet
- b - Transmission cooler
- c - Gen III Cool Fuel module
- d - Exhaust and seawater outlet
- e - Exhaust manifold
- f - Distribution housing
- g - Water circulating pump
- h - Thermostat housing

- i - 14 degree exhaust elbow
- j - Seawater pump
- k - Heat exchanger
- l - To transmission cooler
- m - From seawater pump
- n - Seawater
- o - Ethylene glycol mix

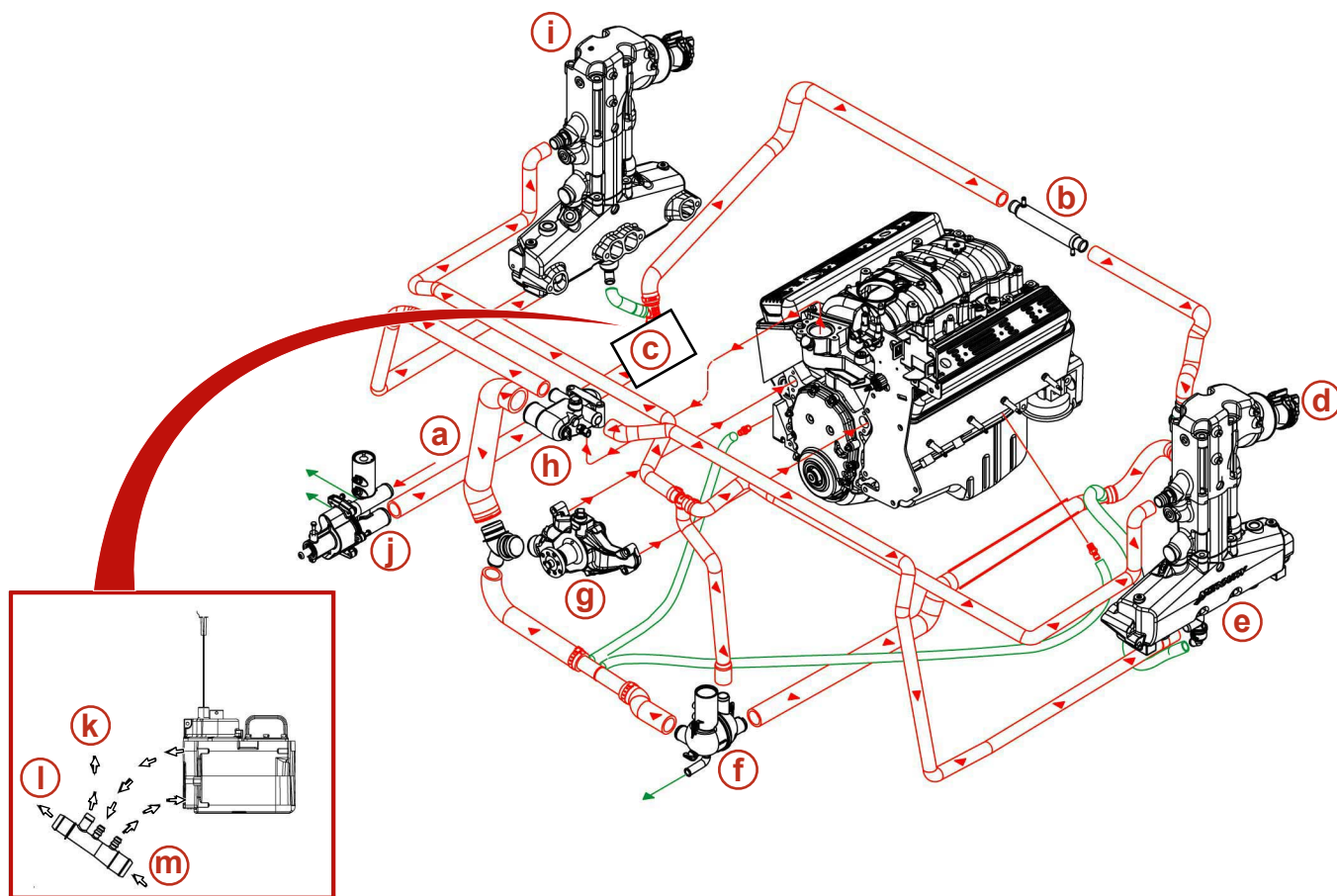
CLOSED COOLED V-DRIVE EXHAUST MODELS



- a** - Seawater inlet
- b** - Transmission cooler
- c** - Gen III Cool Fuel module
- d** - Exhaust and seawater outlet
- e** - Exhaust manifold
- f** - Distribution housing
- g** - Water circulating pump
- h** - Thermostat housing

- i** - Exhaust elbow
- j** - Seawater pump
- k** - Heat exchanger
- l** - To transmission cooler
- m** - From seawater pump
- n** - Seawater
- o** - Ethylene glycol mix

SEAWATER COOLED MODELS



8184

- | | |
|--|--|
| a - Seawater inlet | h - Thermostat housing |
| b - Transmission cooler | i - Exhaust elbow |
| c - Gen III Cool Fuel module | j - Seawater pump |
| d - Exhaust and seawater outlet | k - To starboard exhaust manifold.
(Drain from starboard exhaust manifold when activated). |
| e - Exhaust manifold | l - To power steering cooler |
| f - Distribution housing | m - From seawater pump |
| g - Water circulating pump | |